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SEEMING ODDITIES IN NATURE.

THE marvellous profusion and varieties of animal life give naturalists considerable trouble in the way of rigorous classification. Setting out on the principle that each living thing must belong to one or other of the divisions which have been arbitrarily formed, the result is far from satisfactory. Nature refuses to be bound by strict rules to suit any classification however learned and specious. The distinction laid down, for example, between beasts and birds, is in some cases very illusory. Nature beneficently introduces creatures on the scene which can be called neither beasts nor birds, but form a kind of combination of both. Some would describe this as an eccentricity, and that the animals so created rank as natural wonders. They are doubtless in a sense wonders; but all animated nature is wonderful, and we are not entitled to say that any living creature is an oddity, or something off at a side. We are to understand that nothing has been made in vain, or in a spirit of frolicsomeness. Each animal, small or large, from the crawling mite to the elephant, has its assigned use, and is provided with a form and faculties precisely adapted to its state of existence. When we seriously think about it, the subject is tremendous, overpowering. We are lost in awe of the Infinite Wisdom manifested in Creation.

These observations are not made as preliminary to a dissertation on natural history, but to point out an instance of a tribe of animals possessing that combined or half-and-half character which perplexes men of the Cuvier stamp in their straining to classify everything according to some conventional standard. In any such combination there is obviously no mixture or monstrosity. The simpler plan has consisted in piecing on, as it were, some of the attributes of a bird to the general structure of a quadruped. This is conspicuous in the different species of bats, or *cheirop-tera* as they are scientifically called, from two Greek words signifying a hand and a wing. The designation does not by any means express the

true character of these very remarkable animals. They might more correctly be described as flying quadrupeds; some would say flying mice; for to such they have a considerable resemblance. Odd-looking as bats appear, they are a combination of beast and bird, so ingenious, so expressly calculated to perform their principally required function of clearing the air of night-flying insects, that nothing better could be conceived for the purpose. Let us present a few particulars concerning these curious creatures.

There are perhaps a dozen species of bats respectively designed to act their part in different parts of the world, but they are all winged quadrupeds, various in size, corresponding to the duties they have to perform, and to the climates in which they are located. The bat common in Great Britain is small in size, and known only as a harmless and peculiar autumn-evening flutterer in villages and barn-yards where its prey is likely to abound. In some of the English counties it is known as the Flittermouse, while in Scotland it is poetically celebrated as the Baukie-bird. Thus Burns refers to it in the opening lines of 'The Jolly Beggars'—

When lyart leaves bestrew the yird,
Or wavering like the baukie-bird,
Bedim cauld Boreas' blast.

Of whatever species, the bat is mammiferous. It suckles its young, of which it has one or two at a birth, and its mouth is provided with teeth. It has four legs, but two of them resemble arms, and it has a tail extended from the vertebra. Each arm consists of two long bones with an elbow-joint. At the outer extremity of the arm, as with a human hand, there are four fingers and a thumb. The fingers are long thin bones attached lengthwise to the membranous wing, which they expand like the slender whalebones of an umbrella—a most beautiful and effective arrangement. The thumb projects, and is an interesting member. It resembles a claw or hook. By means of its two hooked thumbs, the creature can suspend itself from branches of trees or other projections, and is enabled to draw itself forward on the

ground. The legs are short, with knee-joints, and the claws of the toes help the thumbs in the matter of suspension. Arms, legs, and tail are all united with the membrane of the wings, and materially aid in propulsion through the air. Everything in the general structure of the animal is subsidiary to the function of flying. The wings, however, are inferior to the wings of birds, such as those of the swallow. But they perfectly fulfil their purpose. Consisting of a membrane which wraps the body like a cloak, these bat-wings are powerful in darting swiftly in a series of jerks and zigzags in pursuit of moths and other insects. Besides relying on its eyesight, the bat possesses the advantage of an extremely delicate susceptibility in its thin membranous wings which reveals the presence of any insect it happens to touch in its flight. Had the wings been of feathers like those of birds, this important quality of detecting insects by the slightest touch would have been lost.

Numerous fanciful notions are entertained regarding bats. They are said to be able to see in the dark, and that they are bloody and vengeful in their nature. As concerns seeing in the dark, that is quite erroneous. Their power of avoiding obstacles when flying in darkened places, is not due to their eyes, but to that keen sensibility in their wings that has been just alluded to. The thin leathery wings of bats are their antennæ or feelers. Darting about in all directions in utter darkness, they are never by any chance impeded or injured by obstacles that happen to be in their way. Experiments have been made, by stretching strings across darkened places in which a number of them are confined, and no string is ever disturbed in their flight. The exquisitely radiated system of nerves in a bat's wing offers one of the finest studies in animal physiology, or we might say in natural theology. Shall a creature so ingeniously formed be spoken of with sentiments of hostility or derision? On the contrary, it should excite our warmest admiration. Artists from time immemorial have been in the habit of depicting malevolent demons with wings on the pattern of those of the bat—a piece of conventionality wholly at variance with what is learned from a contemplation of the actual facts in nature. The bat is no more fiendish than the swallow, or any other bird which has been appointed to rid the atmosphere of superfluous and destructive insects.

It would seem as if some professed physiological inquirers would stick at no sort of cruelty in their assumedly scientific experiments on harmless and helpless animals. We have a notable instance of this inexcusable atrocity in an experiment said to have been performed by Spalanzani, an Italian naturalist who flourished towards the end of last century. He probably would have scorned to commit an act of wanton cruelty; yet in what he deemed to be the interests of science, but which we impute to nothing else than idle curiosity, he was guilty of an act that can be spoken of only with horror and detestation. Desirous to ascertain by what sense—hearing, touch, or sight—bats are able to avoid obstacles in the dark, he prepared a darkened room, in which he performed the following experiment, as described by Mr Jessé in his 'Gleanings in Natural History.' He hung up some cloths across the room, 'with holes

in them here and there, large enough for a bat to fly through. He had previously prepared some for this experiment by depriving them of their sight, and as much as possible of their hearing. On being turned loose, he found that they flew without the least difficulty through the holes in the cloths. It is inferred, that as they did not anywhere touch the cloth, they must have been warned of their approach to it by feeling the repulse of the air set in motion by their wings, and have distinguished the hole by no such reaction taking place.' We are by no means satisfied that this is the right explanation; for in avoiding strings stretched across a darkened room, bats must be guided by something else than the repulsion of the atmosphere. Be this as it may, the putting out of the eyes, and destroying the hearing of several bats, for an experiment of no practical value, was an act simply infamous. In the name of humanity, we must hold Spalanzani, however great a naturalist he was, to have been guilty of a base and reproachful action. In the present day, he would have exposed himself to a just prosecution for cruelty to animals. The time has come when under no pretension of serving the interests of science will the mutilation or other acts of cruelty on creatures claiming our sympathy and protection be tolerated.

Only one species, chiefly inhabiting the dense forests of South America, and designated the Vampire bat, is known to have a taste for blood. This appetite, like that of the gad-fly, is demonstrated principally in settling on the shoulders and flanks of quadrupeds, and with their teeth inflicting wounds that are apt to be troublesome. In the absence of animals to be attacked, natives sleeping in the open air are said occasionally to suffer from incisions in their feet or toes. Waterton, in his South American rambles, was exceedingly anxious to be bitten by the Vampire bats, and slung his hammock in an open loft for the purpose, without effect. The bats that fluttered about all night declined to meddle with him; but a native Indian lying near at hand suffered by the abstraction of blood from his toes. Fowls were likewise attacked, and an unfortunate donkey came in for a large share of attention. Vampire bats wherever found, are provided with sharp-pointed incisors, so arranged as to make a triple puncture like that of a leech; and as in the case of leeches, these bats might possibly be rendered medically available as phlebotomists. Their habits appear to have originated the eastern superstition of the Vampire, a troubled spirit that with carnivorous appetites preyed on living beings by sucking their blood during sleep, and which under the name of Ghoul figures in the 'Arabian Nights' Entertainments.' Perhaps it would be more correct to say that the designation Vampire given to the poor bats was derived from the Vampire of legendary superstition. Anyway, the bats are guiltless of the hideous revelries we hear of in the old legends.

Viewed as strange creatures, neither exactly one thing nor another, bats possess strong characteristics of their own. For one thing, bats do not live gloomily aloof from each other, but form communities in which, we may suppose, they derive much mutual comfort. Some species are more gregarious than others; but on the whole, they indulge in the pleasure of living together in places away from other animals. They are to be found

in garrets, church spires, and caverns, where during winter they can socially suspend themselves by their claws to rafters or to the clefts of rocks. If the place be particularly suitable for their hibernating habits, they may be seen hanging in myriads with their heads downward, yet not so dormant as they seem; for upon any noisy intrusion, they will burst away like a cloud overhead.

In an American newspaper, an account was recently given by a gentleman of his visit to a cave in Texas of unknown extent, which for that part of the world might be termed the metropolis of bats. The cave, we are told, 'is entered by a mouth some thirty or forty feet wide by twelve or fifteen high, and the interior walls, of a hard bluish limestone, are perfectly dry. No crystallisations of any kind were discovered by the explorer, but the interior was perfectly alive with uncounted millions of leather-winged bats. Hanging to the walls and ceilings were everywhere clusters of these creatures, like bees that had settled, while the air seemed alive and vocal with the incessant hum of myriads in ceaseless and apparently objectless flight. Every evening, we are further told, the bats come forth to seek food. "First," says the narrator, "came a small detachment of a thousand or two, and after an interval of some minutes, the flight commenced by millions and billions. For two and a half hours the bat stream was incessant, filling the mouth of the cave completely; and on our way to camp we could see the undiminished stream of animal life still flowing, and looking in the distance not unlike long lines of black smoke from the chimney of a sea-steamer." At the first blush, a bat cave like this does not seem a very desirable thing for a man to have on his "home lot." But the shrewd Texan proprietor is of a different opinion. The floor of the interior was found to be twenty-five feet deep in a deposit smelling so strongly of ammonia, that forthwith a sample was despatched to the nearest analyst, who pronounced it to compare favourably with the guano of Peru. Here was an important discovery, inasmuch as the known parts of the cave are estimated to contain eighty thousand tons.' The last thing heard of is that the proprietor was busily sinking a shaft down to the main chamber, and receiving the congratulations of his friends on having fallen upon a mine of guano. We await with interest the practical issue of this strange discovery.

Besides being companionable in their seclusion, bats may challenge any living creatures for the care of their young. They shew immense parental solicitude. The female carries her infant bats about with her, covering them the best way she can in her cloak-like wings, and from time to time resting to suckle them. On these occasions the papa bat lends a helping hand. He watches over the mother and her charge, tending them assiduously, and nestling close to them, to impart warmth and protection. In some respects, therefore, the good conduct of bats might afford a lesson to beings of much higher pretension. Facts like these acting on the higher emotions, should materially qualify the ordinary ideas about bats. From their retiring and crepuscular habits, they can hardly be made pets of, like dogs or canaries. Nevertheless, as observed in their aerial flights, they are gentle and amusing; and instead of

being pelted, abused, and shot at, they invite our interest, compassion, and gratitude. As auxiliary to certain birds, they are of much service to the agriculturist and gardener, by keeping down the numbers of noxious winged insects. In particular, young persons, who are too ready to fall on defenceless creatures, should be taught that in the physical constitution of the often maltreated bats there are perspicuously demonstrated the wisdom and goodness of that ALMIGHTY BEING, 'who made and loveth all!'

W. C.

YOUNG LORD PENRITH.

CHAPTER VIII.—THE WATCHERS.

LONG MICHAEL, first-officer, according to modern euphuisms, of the *Western Maid*, certainly deserved his distinctive appellation, being immoderately tall, high-shouldered, lean, and lathy of build. Even in Kentucky his unusual height would have attracted notice, and the more so perhaps because of the apologetic and somewhat bashful bearing that was familiar to him, as though he felt himself to blame for the superabundance of his inches. He was nearer to fifty years than forty; and had a hardy weather-beaten face, that contrasted oddly with his mildness of manner, as he stood hat in hand in Captain Trawl's parlour.

'You're welcome, Captain,' said the grizzled mate of the steamer, as with indescribable awkwardness he made a sort of bobbing bow to his young commander. 'I've taken the liberty, ye see, to come up here, with Captain Trawl's good leave, to report the *Western Maid* ready for sea. We'm got the fires banked up; but we could get a goodish head of steam in a matter o' seventy minutes after signal.'

Hugh shook hands with his gigantic subordinate. 'I feel more than half-ashamed,' he said in his frank way, 'at the notion of giving orders to an older and more experienced seaman like yourself, the more so, as all this pilchard business which my kind friend Captain Trawl here was trying to explain to me, is just so much Greek to a newcomer such as I am. It seems hardly fair that I shall have to depend on your good-nature to teach me my work.'

Long Michael's honest face glowed with mingled shame and satisfaction, and he shuffled his great feet to and fro like a bear on a heated floor. 'No trouble, Cap.—none at all,' he returned, coughing behind his broad hand, as he looked benignantly down at Hugh from under the pent-house of his grizzled brows. 'Tain't possible now to get to know your bearings all at once when you cruise in strange waters, and our Cornwall coast and its ways must in course be puzzling to a stranger at first. I've been a Channel groper myself, I have, man and boy, for nearly forty year; and even in a fog I think I could feel my road about somehow; but that comes of practice.—Before winter and the wreck-weather come upon us, the skipper will be used to steamer and used to coast; won't he, Captain Trawl?'

Hugh's host assented to this proposition, remarking that the pilchard-fishing was a nice easy job to begin with, and that the new skipper was in luck to get afloat so early. As he spoke, he mixed a glass of 'something' for the mate; and Long Michael—ceremoniously prelude his draught by saying, 'Your good health, captains both—Yours,

Miss Rose, I'm sure!"—sipped the steaming compound with modest enjoyment of its fragrance. Meanwhile old Captain Trawl related how, so anxious had been the vigilance of the fishermen that day, that the very bugles of the coaches on the roads skirting the sea had been silenced; and that there had been an order given to postpone the firing of 'shots' in certain quarries that stood but a little above high-water mark, lest the precious visitants should be scared away.

"There be they that say," observed the old seaman dogmatically, 'fish have no ears. Anyhow, a drum, or a gun, or so much as the squeak of a fiddle in a ship's foc'sle, is enough to head back the whole drove on 'em. And if pilchards fail, there'll be cold hearth-stones and children crying for hunger, in many a village from St Mary's to the Seal Rocks. They're a bit latish this year.'

Presently the mate said good-night, and departed, not, as he explained, to 'turn in regular,' but to lie down, waiting for the summons to action. He recommended his new commander to do the same. 'One of the lads'll run, once the cry's given, Cap,' he said; 'and 'twill be as well for the men's tempers—asking your pardon for the freedom—not to keep them waiting over-long.'

Hugh followed his lieutenant's well-meant advice, and lying down full-dressed on the spotless little bed with its snow-white curtains, slept as he had slept on many a night when the war-cry of the savage or the howl of storm-wind through the rigging was likely to awaken him, ready to spring up at the first call. But the pilchards were capricious, and Hugh's slumbers were undisturbed. Even at dawn, no cry burst forth from jutting crag or hill-top. The morning passed quietly away, and Hugh began to fret at the delay which doomed him to inaction. His own desire had been, as was natural, to go up to the Court at as early an hour as the habits of gentlefolks permitted, and to pay his thanks to his benefactress in person for the great kindness she had rendered him. But old Captain Trawl was strongly against his going up to Llosthuel. 'Suppose you to be absent there, my bo,' he said, 'and the cry to sound, and the *Western Maid* to be waiting for her skipper, and perhaps a thousand barrels lost through that. Even my Lady wouldn't like it.'

But at last, as the dreamy golden morning went on, Hugh could no longer endure the suspense; and he was in the act of sallying forth from the garden-gate, when a breathless lad in red shirt and Flushing serge ran hurrying up.

'Cap'n Ashton! They want you, sir. Long Michael the mate bid me say they've signalled.'

Clear and distinct to Hugh's ear came through the distance the far-off cry from cliff and crag: 'Fish, ho!' 'I'll not keep them waiting for me,' answered Hugh. A boy can run better than a man; but it was all that the young apprentice could do to keep abreast of his young commander as they traversed the cobble-stoned streets and emerged upon the quay.

'Yon's *Western Maid*!' cried the boy.

There were vessels in plenty in Treport harbour, or in local parlance quay-pool, on that day, over and above the *Western Maid*. No steam-ships it is true, but a pack of fishing-craft, with red sails, brown sails, white sails, hastily getting ready for

sea, and being hauled and towed out of harbour, bronzed, black-bearded giants springing on board, women, striplings, and children buckling to the tow-rope. The *Western Maid* had steam up by this, and lay alongside the harbour snorting like some angry crocodile in the Egyptian mud. Her crew were bustling like alarmed wasps, to and fro. There was no landing-stage ready, no gangway manned, none of the preparation which we see in passenger steamers. Hugh caught hold of a rope and swung himself on board, dropping from the quay to the deck more deftly than did the ship's boy who followed him.

'That's something like! Cap. be a sailor, I see that,' muttered several who saw the act, men and women alike; for women along that storm-beaten western coast are smart critics and severe judges of what a man who grapples with the all-devouring sea should be to make him worthy of such a foe. There was nothing, so far as the natives of Treport could observe, to object to in Hugh Ashton. A stranger he was, a 'foreigner' in local speech; no Cornishman, not of the 'one and all,' of the famous mining, fishing, wrestling county that was once a kingdom.

But that was the head and front of his offending; and once pardoned on that score, he promised to make friends rapidly on the strength of his own merits. That he was a gallant young man was clear—lithe, active, taller than any of his crew save Long Michael and one son of Anak, who however, was from Beer, of smuggling fame, in the bordering shire of Devon. 'Bustle about, lads! Clear away there! Take the helm, my man, will you! And you, boy, run below and tell the engineer to be ready to put her at quarter-speed till we're out of port!' ordered Hugh; and Long Michael, whose generous soul was aglow with pleasure at finding his young superior equal to the situation, seconded these orders with all the zeal he could muster.

'Wish ye luck, Captain!'—'Good-luck, skipper!' said twenty rough, and as many shrill voices from the pier, as the steamer glided out. Hugh waved his cap in reply. The sunbeams glinted on the young man's dark hair and proud handsome head, as he stood, gracefully and quite at home, on his deck.

'Looks as if he'd been born a skipper,' was the word in many a humble home that day when Hugh was mentioned. The *Western Maid* slid softly out to sea, the helmsman's main difficulty being to avoid fouling any of the red-sailed smacks that were creeping out of Treport, or making their slow way, like so many wet-winged moths, across the heaving sea, under the pressure of the tantalising breeze, that was not steady for ten minutes at a time.

'Cap,' said Long Michael, sidling up to Hugh, 'we'm safe out o' harbour, and that's thanks to you. Let me tell 'ee between ourselves, that if you'd rubbed a penn'orth of paint, or so much as rattled a block, off one o' them smacks, they'd have grumbled—men are that onreasonable. And if I'd stood by you, sir, and helped, they'd ha' grumbled then, and said: "Old Michael be a dry-nursing him to know the sea." That ain't true, Cap, for you've been long-voyage; hev'n't ye?'

'Long enough! Four months, once, whaling and sealing in the Antarctic Sea,' answered Hugh with a smile.

'But,' said Michael argumentatively, 'you can't know the Channel, and specially our pilcharding, without bein' taught, no more than I knows Commodore Johnson's Greek Dictionary, or whatever it is, by the right name of it. Now here we are slick out, ready to help; but we musn't go too fast.'

'Why too fast?' asked Hugh, surveying the sea.

'Because,' the mate made answer, 'we're no more good by ourselves than a mill is, bless ye, when there be no grist to grind. We'm got no nets to shoot. All we can do, I reckon, is to help them that has. There's two ways we can do that. Take the boats in tow—that's one; but they're all loath to pay for that so long as there's a breath to fill the sails; and I can't blame them. T'other way is surest. We can tow nets inshore to beach, and get the pilchards landed, when, but for us, tons-weight of the shiny things would break away and get lost. But there's them as be mortal jealous of our steamers. Some of the free fishers be. Enterprisers be more so.'

In answer to Hugh's inquiries, Long Michael at once informed him of the existence of certain irregular associations on the Cornish coast called Enterprisers, the members of which were fishermen who fished in unison.

'Twarn't bad at the beginning,' explained the mate. 'The idea war not a bad one. The men ye see, Cap., had been ground down by the Jowders, and they was sore against them.—You don't know, sir, what a Jowder is. Well, I'm sorry to say he's a precious old rascal, that buys fish, and buys it on his own terms, having money in hand, and fishers none, and Jowders hanging together to keep down prices. So it was natural the owners of boats should wish to help one another and be free of the Jowders, and sell all at one rate, and get a smack out of bay in case of need, and be like brothers. But the Jowders—cunning old sea-dogs!—they bided their time, they did; and through having one man under their thumb, and lending to another, and what not, Enterprisers are obliged to bid them fair, they be.'

Long Michael went on to say that Jowders and Enterprisers were combined in a strong dislike to the steam-vessels of the Western Tug and Salvage Company; the former because their co-operation at critical moments tended to cheapen the price of fish; and the latter on account of that unreasoning jealousy which uneducated Labour has at all times exhibited towards Science backed by capital.

'There have been riots north-west way agin the use of steam,' Long Michael said; 'and though there's been none o' that among our chaps, it's best not to thwart their prejudices. If the shoals war to turn tail, and we be near, they'd lay all the weight of it on the *Western Maid*. So we'm better keep a good offing, Cap., until the pilchard drove be well inshore and every seine cracking with the netted fish; and then they'll be glad to call us to their help, and won't grudge the pay neither.—Yon's the lighthouse; and there, beyond the Point, that's St Mary's Bay. Once the shoal gets well in, their own pressure will keep them moving; and sometimes girls and boys from the beach can wade into the shallows, and get them in creels and caps and anything, they're that

thick.—Keep her away, Peter Mawgan, d'ye hear!—And I think the engines had better stop altogether; not the steam-head, though. We'll want speed when the hurry comes.'

SKETCHES IN THE HIMALAYA.

It is commonly understood that there is a considerable mortality among the children of the white population of India; but of late years this evil has been greatly reduced by the establishment of Sanatoria and 'Children's Homes' in the Himalaya Mountains. To the former regularly resort, at the commencement of the hot season when the plains are no longer enjoyable, those who can command the means of a residence in that vast mountain-chain familiarly called 'the Hills,' where civil and military stations are now numerous, and life is spent in a temporary round of amusements, unknown to the people of England.

Access to these sublime and beautiful regions is easy; and between the mountain-tops and the picturesque valleys, perpetual summer may be found. These mountain-homes of our countrymen are not only thoroughly enjoyable to the lovers of Nature's beauties, but they also enable them to reproduce the domestic life of the mother-country with all its homely joys; and in so genial a clime, a sound mind in a healthy body finds abundant opportunities of following the pursuits of science and of literature, in comparatively fresh fields.

Leaving Umballa early one morning at the commencement of the hot season, we rode across country to Lalroo, a small village, where we changed horses. Thence we cantered nine miles through a rich country, diversified by many pleasing bits of scenery, to the *dak* or staging bungalow of Bussi, where we again mounted fresh horses, and galloped forward to the village of Munumajra, at the entrance to the pass of the Sewalic or outer Himalayan range, which towards its eastern extremity presents a sharply serrated outline, with an average height of about thirteen hundred feet.

Next morning we passed through this range—a distance of several miles—by tortuous water-courses and fragmentary roads, and entered the Valley of Pinjore, near the village of which are the splendid terraced gardens of the Maharajah of Putteala, a chieftain of the Cis-Sutlej States, whose unswerving fidelity to the British government during our wars with his countrymen the Sikhs, has been rewarded with extensive additions to his territorial possessions.

Here are innumerable fountains and artificial cascades, sparkling with the pure waters of the mountain-streams which feed them; *jets-d'eau* shoot aloft and adown the marble canals; whilst elegant pavilions of the same material afford the most charming retreats, where lulled by the murmurs around, in an atmosphere filled with the perfume of the rose, jasmine, oleander, and orange, the oriental sybarite, with his hookah and pomegranate sherbet, may conjure up waking dreams such as may have inspired the *Arabian Nights*. Now confronting the traveller, rise the bold bluffs of the outer range of the Himalaya proper, to an

elevation of about seven thousand feet; and putting spurs to our horses, a five-mile ride along an excellent road brought us to the small village and English hotel of Kalka, at the base of the mountain on which stands the military station of Kussowlie. The ascent is by a steep and tortuous road about eight miles long.

As we continue to ascend, the Sewalic range no longer obstructs the view of the plains beyond; and in the far distance may be seen the winding Sutlej, pursuing its way like a silvery python along the boundary of the Punjab. A sudden turn of the road carries us to the northern side of the mountain, and the station of Kussowlie breaks at once on the view; first the parade-ground, about an acre in extent, around which are the low flat-roofed barracks; and gradually the various bungalows of the residents, perched here and there upon every available scarped spur or ledge of rock, and surrounded by dark fir-trees (*Pinus longifolia*) and various shrubs, of which more presently. A stranger arriving during the dry season would not be aware of the splendid panorama, which a dusky haze obscures; but after a day's rain the magnificent scene is revealed in all its wondrous features. This station, one of the earlier established sanatoria, is named after the small hamlet of Kussowlie, which is situated in a valley below. From the roads which wind along the spurs of the mountain, the view looking north embraces seven distinct ranges, including the sublime Snowy Range, whose sharply serrated peaks rise to an altitude nearly twice that of Mont Blanc. In the middle distance lie the military stations of Subathoo, Dugshai (and the Lawrence Asylum); while farther off may be distinctly seen the *deodar* (Himalayan cedar, often a hundred feet high) crowned heights of Simla.

From about the 1st of May until the rains commence on the 15th or 16th of June, the aspect of these mountains is barren and parched, reminding one of sheets of crumpled brown paper; the foliage of the fir-trees is reduced to scanty brown tufts; the incessant hum of insect-life becomes tiresome; while occasionally the sun breaks forth with great fervour through the reddish haze. At night, thousands of fire-flies cover the stations as it were with glittering sparks, and not unfrequently one may hear the distant rumbling of thunder. But in the valleys the aspect of Nature, even at this season, is very different. Here, instead of fir-trees and the wild pear, we find magnificent walnut and apricot trees; and wherever a spring of water gushes from the cleft rock, one is generally sure to find the delicate Himalayan primrose, the dark-scented and pale violet, strawberries, and at certain periods of the year, yellow and white jessamine, St John's wort, wild-roses, azure rocket, flowering ferns, thickets of the crimson rhododendron, and gnarled oaks; besides a great variety of other flowering shrubs and plants.

One of these romantic little streams at Kussowlie has its source in a ferny cleft, shaded by willow and walnut boughs; while along its course the narcissus and iris, marvel of Peru, blue pimpernel, eglantine and musk-roses, grow in abundance; but although the spot seems to be in a state of nature, it may be questionable whether some of the plants just mentioned are really indigenous. The curious 'leaf-insect,' as well as the 'walking-stick' or

twig-insect, may be seen at Kussowlie, but more rarely than at the stations of Mussoorie and Landour, at certain times of the year. There is also a singular tree-beetle, which attaching a crooked instrument with which Nature has provided it to any twig which it wishes to cut off from the tree, spins its body round on this curious axis, until after a loud buzzing sound it falls, with the twig which it has sawn off, to the ground. These beetles at certain seasons are so numerous and active as to become a positive nuisance.

The north-eastern extremity of Kussowlie is bounded by a finely stratified peak, which rises sharply at the farthest turn of the road, and is understood to be the highest point of this ridge. It is called by the Puharries or hill-men, Kama Deva or the Mountain of the Hindu god of Love, Kama; but by the English residents, 'Tapp's Nose.' On the summit is a rude shrine of unhewn stones about two and a half feet high; and on the horizontal stone over the aperture there is a rude representation in relief of the god Rudra. (This deity or idol is sufficiently rare to be worthy of special remark.) Being interested by the discovery of a comparatively rare image, we made some slight excavations, and were able to trace the foundation of a more extensive building, and also the remains of a well; but in such a situation, for what purpose it was used, except as a tank, it would be difficult to say. This fine rock commands a magnificent view of the plains on the one hand, and of the inner Himalaya on the other. It is sometimes also called Monkey Hill, from the vast numbers of small brown monkeys that frequently resort to it; although it does not bear any herbage whatever but grass, and does not present any special attractions to the lower animals, unless we assume that monkeys are capable of appreciating the picturesque.

Europeans after but a short residence in the Himalaya, acquire a facility in even cantering down roads on their sure-footed mules and ponies which at first might have appeared only suited to the careful pedestrian. The widest of the roads connecting the stations are seldom more than about six feet broad, with rocks on the one hand, and a precipitous descent on the other. In some places however, the roads are so steep that precautions are necessary, at the slowest pace, to prevent the saddle slipping over the pony's neck. Occasionally, and especially after heavy rain, accidents occur to those who try 'short-cuts' by the *pug-dundis* or narrow footpaths used by the natives. How the celebrated Mohammedan invader of yore, after the sack of Delhi, managed with his wild hordes, laden with plunder, safely and rapidly to penetrate these mountains, and to leave no trace behind, in the short space of time which history records, is still a problem. They came and went like a flight of locusts; and the difficulty of their retreat can only be realised by one who has actually travelled in the few and tortuous passes of the tremendous barrier interposed between India and Central Asia.

Leaving Kussowlie at five o'clock, we used to consider it a fair average ride to reach Subathoo by seven, although the actual distance cannot be more than nine miles. Two-thirds of the way are occupied in the descent of the Kussowlie range, at the base of which a stream must be

crossed; and after that there is a gradual ascent to Subathoo, which lies about three thousand feet lower than the other station. The station of Subathoo is, for a hill-station, comparatively flat; yet it has been found necessary to build many of the houses on the lofty eminences surrounding it; while a square native fort, flanked at the angles by round towers, has a picturesque aspect beside the low flat-roofed barracks. Beyond Subathoo, the road again descends. The bare rocks on which only euphorbiaceous plants seem to grow, present a forbidding appearance, which is increased by the grotesque forms of this genus of plants. At the bottom of the next valley, about five miles on the road to Simla, there is a beautiful and rapid river, which is spanned by an iron suspension bridge. Imposing rocks rise on each side of the stream, along the face of which, by blasting, a road has been made. About a quarter of a mile beyond this river is the uninteresting dāk bungalow of Hurrpore; and beyond it the road is tiresome and monotonous.

On one occasion, although during the dry season, we were overtaken by a storm, at about four o'clock in the afternoon. We had observed heavy clouds gathering in the north-west, accompanied by the distant muttering of thunder. The darkness rapidly increased, and in half an hour more the storm burst overhead with astounding fury. Peal upon peal of thunder reverberated from rock to rock, and from mountain-top to valley, in rapid succession, accompanied by incessant flashes of lightning and wild squalls of sleet. Urging on our pony to its utmost speed, we soon reached the next staging bungalow at Synie thoroughly drenched; and glad of a refreshment of milk and excellent wild raspberries. The storm had now died away. It was about six o'clock when the setting sun burst forth from a canopy of golden clouds with a startling effulgence. There was something solemn in the sudden and profound repose of Nature; and the grandeur of this effect was much heightened by a magnificent and perfect rainbow completely spanning the valley before us, and dyeing the rocks at each extremity with its iridescent hues.

Leaving Synie at dusk on government mules, after a most fatiguing ride we arrived at Simla about ten o'clock, and proceeded at once to the *Pavilion Hotel*, when having had supper, conducted by a guide, we soon found the bungalow which we had rented for the season. On awaking next morning we were charmed with the situation of our new residence, which was perched on the top of a spur of the mountain, and commanded a fine view. The garden in front of the veranda was not more than twelve feet from the brink—not indeed of a precipice, but of a steep descent, the angle of which was so sharp, that any one falling over must have rolled down at least a thousand feet. In this small garden-plot there was a profusion of the loveliest pink cabbage-roses in full bloom. Over the amphitheatre of mountains directly in front one might see, through a gap, Subathoo and Kussowlie; and in the extreme distance the carpet-like plains stretching far beyond Umballa to the horizon's verge. Our bungalow was shut in at the sides by gigantic pines and deodars. Beyond these to the eastward, at a higher elevation, might be seen the bazaar; and still farther off, the picturesque Jocko, dotted

over with Swiss cottages and bungalows. The station of Simla rose at the back of our house, and occupied the remainder of the scene.

The grandest feature in the scenery is of course the majestic Snowy Range, which rises from the valleys and lower ranges to the north of Simla in a stupendous mass, that at the first view is almost overpowering in its effect on the mind even of those who have travelled in the Alps. It is with difficulty that the mind realises such vast altitudes. Far above the region of animal life, these stainless peaks rise into the blue empyrean, so little of the earth earthy, that in the early morning, when first struck by the beams of the rising sun, before the latter have illumined their bases, which are lost in the gray blue of distance, they seem, cut off by the limit of perpetual snow, like a magic canopy, midway between heaven and earth. Sometimes at sunset, for a few minutes the Snowy Range assumes a roseate hue, which suddenly vanishes, as it were in the twinkling of an eye, and presents them in a silvery gray aspect—'distinct but distant; clear, yet oh, how cold!' But it is in the moonlight that these awful solitudes seem most ghost-like, for at such an elevation there are no clouds; and when the lower atmosphere is also clear, the effect is in the highest degree sublime.

But from the stations to the eastward, such as Mussoorie and Landour, the Snowy Range appears even grander than from Kussowlie and Simla, for from the former, the peaks above the sources of the Ganges and Jumna, beautiful in form, are conspicuous; while farther to the east may be perceived, overtopping the range, the extreme point of Kunchinchunda, one of the highest elevations on the face of the globe.

The aspect of these hill stations, as they are called, varies considerably. Thus while the noble cedars and pines of Simla and its sisters give a cold character to the scenery, the noble oaks of Mussoorie and Landour, garnished with beautiful ferns and epidendrons on their mossy trunks and branches, clothe the mountain-sides with the beauty of almost tropical vegetation. During the rainy season the atmospheric effects are quite magical. Thus when one is enveloped in rolling clouds which shut out the sunshine, a sudden break in the former will disclose some sunny spot, bright and green like a landscape painted in enamel, on some loftier mountain, near enough to be quite distinct.

One of the earliest harbingers of the rainy season is the gigantic adjutant bird; and about the beginning of June these solitary storks may be observed standing like sentinels on projections of rocks facing the plains, at an elevation of between six and seven thousand feet. At this season the sudden changes from light to darkness and from darkness to light, the roar of waterfalls leaping a thousand feet and more in some places into the ravines below, and the beauty of the floral world, present combinations on so grand a scale that it would be impossible for the best of artists to give even the faintest idea of the whole. These effects in spring are even more remarkable, when amid the lingering snows, the crimson rhododendron rises like a pyre of flame, to the height of thirty feet and even more; while the wild-vines and the white wild-roses, on withe-like stems, entirely envelop the largest

pear-trees with a profusion of blossoms. But it is in winter that these mountains are grandest, for it is then—in January—that the most terrific thunder-storms prevail, and the lightning illuminates the pathless snows away in the far distance. In the inky blackness of night, from Landour for instance, the whole of the sister-station of Mussoorie will suddenly be revealed by one brilliant flash; and the next moment, darkness the most profound shuts out even the nearest objects a few paces off, while the thunder rolls not only above and around but below. In winter however, there are generally but few Europeans resident in these mountains; for those who are not required to return to the plains, seek summer again in the enchanting Valley of Dehra Dhoon, which may be reached in an hour and a half; and whence, amid flowers and sunny gardens, there is a pleasure, with the aid of an opera-glass, in surveying one's late home buried in snow, and exposed to the fury of the elements, while we are enjoying the temperature of Italy, in the late spring; and picnics and sporting excursions in the neighbourhood with their endless round of amusement.

During 'the season' in the Himalaya, the gaieties are incessant, and the entertainments given by the wealthier visitors are generally on a princely scale. Balls, parties, picnics, shooting-matches, archery, and other games, rapidly succeed each other, and at these gatherings many marriages are annually 'arranged.' But although one might suppose that the English in these charming summer retreats were the most frivolous people on the face of the earth, there are always a few who 'love not man the less, but Nature more,' and who profit by the opportunities afforded, of making many valuable additions to our store of knowledge. Indeed amongst the officers of the Indian army are many excellent naturalists, unknown to fame, and also others whose scientific acquirements generally have not always been sufficiently brought to public notice.

THE ADVENTURES OF A LADY HELP.

CHAPTER II.

A LONG drive, as it seemed to me, from Paddington to South Kensington. My eyes grew tired of watching the shops; but whether I would or not, their glare attracted me, and I had to look at them while my thoughts were straying—Where? To those whom I had left at home, to their probable remembrance of me, now that I was reaching the end of my journey? Not so. I was thinking of my fellow-traveller, the one who had just wished me good-bye; and I felt considerably depressed as I recalled his look of disapproval when he heard my reasons for becoming a Lady Help.

I was at last approaching my self-chosen destination; and we drew up at a high, narrow, new-looking house not far from Earls Court Station. The man opened the door, and I stepped out. My heart was aching and beating with a painful quickness. Where was my resolution and spirit? My depression increased on being informed that the fare was five shillings. I paid it without

demur, and the cabby received it with a grin of satisfaction which he could not conceal. As I walked up the steps of Oxygen House I began to experience the wide difference there was between home without a farthing in my pocket, and London among strangers, with a half-crown and a florin in my possession. The cabman, pleased with his own good fortune, and perhaps touched by my youth and imbecility, said in a kindly tone: 'I'll see to your boxes, miss.'

'Thank you,' I replied absently; whereupon he grinned again in a pitying way, which was not reassuring, and proceeded to batter the door with the knocker, while I rang nervously, weakly. I heard some one run up-stairs; the door was flung open, and I was confronted by a grimy and pert-looking servant-girl, who evidently feeling puzzled how to address me, said 'Oh!' Then after a good stare: 'Step in, please.'

I did as she told me, and the cabman followed me with the luggage, which he deposited in the hall, and then departed with a bang of the door which made the whole house shake.

'You'll step down this way,' continued the girl. 'Missis is very sorry; but she and the young ladies was given tickets to the theatre to-night, so they was obliged to go of course.'

'Thank you; it does not matter,' I responded, wondering when we should reach the bottom of the stairs. At last I was ushered into a small stuffy room on the ground-floor, with unwashed tea-things lying on the table, dirty boots strewn about the room as if waiting to be cleaned, whilst a tallow-candle stuck into a bottle displayed these novelties to my wondering eyes.

'We'll take your boxes up-stairs after a bit. I've scarce looked at you yet. Sit down; I daresay you're tired,' said my new acquaintance, whose name she informed me was Jane.

I took the only available chair in the room, while she planted herself opposite to me with her arms akimbo and had a hearty stare at me, then spoke, saying: 'Now I'll just tell you all about it; there's nothing like putting new hands up to things at once.'

I felt inclined to remonstrate, and plead that Jane was not the person to tell me my duties; but she was of a wilful disposition, and checked any attempt at speech on my part.

'You see,' she went on, 'I'm the General. Some calls it maid-of-all-work; but I prefer being the General. It means the same, but sounds better, you know. And you—you're the Lady 'elp.'

'Yes,' I faltered, with a groan and a smile.

'Well,' pursued the General, 'all the work in this house has to be performed by us two, that's clear; and between you and me there's enough of it. I was General in a boys' school afore I came here, and you mayn't credit me, but 'twas nothing to the work after these three young ladies. They're always a-partying and a-going out. It's a real wonder to me they're not worn out afore now; but then they eats well, and there's nothing like that

to keep you up. Now I shouldn't venture for to say so to them; but you are much more the lady, the real thing, to look at than them, with all their sirciety and going out. Now, you are genteel.'

'I'm very tired,' I said, feeling rather disgusted.

'Never mind; you'll be better after a cup of tea. I kept the pot warm for ye. Ye see they think of nothing but what's the Fashion here, and that's just the reason they've got you. It was done all in a sudden. Miss Adelaide came home one evening and told her Ma that Mrs Smith-Jackson had a friend who knew Lord and Lady Something, and they was going for to have a Lady 'elp. So of course we must have one; and here you are.'

Yes; there I was. I could quite realise the fact. The inexhaustible Jane went on: 'They sits most of their time down here, as you may see by the muddle the place is in. Now just throw off your things; and I'll fetch you a cup of tea and a bit of bread and butter, and perhaps you'll like a bit of cold bacon. There won't be supper till they come in, and I'm sure I don't know what to give them.'

'A cup of tea will do for me, thank you, Jane; and I wonder if I might go to bed; I would be up early in the morning to help.'

'Never mind about bed; I haven't laid your sheets yet. You can lie on that sofa, after the room is cleared a bit and them things washed up.'

I felt sick at heart, but roused myself. This would never do. I stood up, took off my hat and jacket, then turning to the General, said plaintively: 'You will let me have tea soon?'

'Yes, miss, I will,' she said, looking at me in a bewildered way, and leaving the room.

'She sees I am a lady, after all,' I thought with a sad satisfaction. Then I looked round the room for a book; but such a thing might never have existed, for all the trace there was to be found of it at Oxygen House, at all events in that room.

'You have no books here,' I remarked, when Jane returned with my tea, which she set down on a corner of the table, having pushed various other things aside to make room for it.

'O yes; there are two somewhere,' she replied. 'They always takes *them* in;' and from beneath the heterogeneous mass on the table she drew forth two journals on Fashion. I seized them eagerly, and studied them while I drank my tea, remembering that I was to assist in costuming the Misses Porter.

Jane began fussing about the room, and soon renewed the conversation.

'The Smith-Jacksons have got a Lady 'elp too; but I've seen her. She's no more a lady than I am. *She* cleans her own boots. Now I had made up my mind that you should too; but now I've seen you I couldn't think of it. You're safe to please 'em; they wants a lady to teach 'em true manners; I heard 'em say so.'

'Oh, I shouldn't mind cleaning my own boots, Jane; I have done such a thing at a pinch.' I really pitied the poor General, who looked quite hot and tired with 'righting' the room, as she called it.

'I feel better now,' I continued. 'I will wash up the tea-things while you finish the room. You'll make up my bed; won't you?'

'O yes; I had just forgot,' she replied, bustling off. When she returned, she took me up to my room. It was at the top of the house, small and scantily furnished, with no fireplace, and but a small window. But it was to be mine, and mine only. When I had been left alone in that strange sitting-room, I was assailed with the horrible fear that I might have to share Jane's room. Had this been the case, I had determined to write to my parents with all contrition and beg for money to return to my home at once.

I came down-stairs again, thinking it better to see Mrs Porter that night in spite of my fatigue. I endeavoured to impart an air of neatness and comfort to the sitting-room, and suggested to Jane that she should lay the places at the supper-table, instead of leaving the spoons and forks in a bundle at one corner, the knives at another, and the plates heaped up in the centre.

It seemed very late when she informed me that we might expect the ladies in at any moment.

'These young ladies and the Missis,' said she, 'as often as not they brings a friend in to supper; that is if it's one they know well and can bring down here. But there, sometimes I've had to carry everything up-stairs all of a sudden, and light the fire.'

At last came a loud ring at the door-bell, which Jane flew to answer; and then I heard loud cheery voices, which as the speakers drew nearer, dropped into an audible whisper. I wonder if a *débutante* facing her audience for the first time, or indeed any one standing on the threshold of a great enterprise, ever felt more strange than I, as I rose to meet my employers. Mrs Porter entered the room first. She bowed to me with an assumed stiffness, saying: 'Miss Danvers,' and looked at me with an air of scrutiny; then she lapsed into what was evidently her natural manner, one of extreme urbanity.

'These are my daughters,' she explained with a wave of the hand.—'Now sit down, my dear, and make yourself at home—yes, quite at home; we agreed it should be so, you know.'

I murmured something, feeling more awkward than I had ever felt before.

'Now Jane, let us have a bit of something to eat; we shall get sociable over that.'

Meanwhile I quietly observed the Misses Porter. They were three fully developed damsels, varying in age apparently from twenty to twenty-five; a strong family likeness existed between them; they all had glossy black hair, dark eyes, and a good deal of colour.

We did not talk much at supper nor advance many steps towards sociability. When the meal was over, the girls withdrew into a corner, and carried on an animated conversation in whispers, interrupted now and then by giggles and exclamations. Mrs Porter invited me to draw near the fire, and commenced to talk. First of all she drew out of me all she could about my home and my reasons for leaving it; and in return she bestowed her confidence on me. The girls saw a good deal of company one way and another, got on well in society; they would all have 'something' when they married; she would like me to move in their circle; I should not find the work hard; and so on. It was not easy from this to form an idea of what my life at Oxygen House would be; I only knew that when I took my candle and wound my

way up to my attic bedroom, one word kept whirling through my brain, almost forcing utterance from my lips: *Vulgar, Vulgar, Vulgar.*

I had never met vulgar people before; but I had read of them; besides, we perceive this failing by instinct.

The following morning I rose early and found my way down to the room to which I had been introduced the previous evening. There I found Mrs Porter in a strange deshabille, busy making tea and coffee; and I heard the General frying something in the kitchen, which was opposite.

'Good-morning, Miss Danvers, I daresay you are surprised to see me this figure; but it is hardly worth while being smart in the morning, when one has to see to the breakfasts. My girls lie in bed; but they go out so much; fashionable people can't burn the candle at both ends, you see. I am glad to find you are an early riser. You can help me a good bit in the mornings, clever or not.'

I felt terribly shy when I started up-stairs with the breakfasts. Adelaide liked her egg boiled hard, Julia preferred it poached, and Amelia had a passion for tinned delicacies. All these tastes were explained to me.

'You'll take Miss Porter's first, my dear; and please don't stay and talk with her; Jane often does, and then the tea I have poured out for the others gets cold, and I have to make fresh; and dear me, there seems no end to it;' and Mrs Porter sank back in her chair, as though exhausted by the idea of such a misfortune. As I went up-stairs carrying a huge tray, the postman knocked. A London postman's knock is startling to country ears, and I nearly dropped my freight; but I recovered myself just as Mrs Porter rushed eagerly into the passage to get the letters. I had to awake Miss Porter; and to my relief, she proved to be far too sleepy to embark in conversation with a stranger. The two other girls who occupied the same apartment, were awake, and seemed quite ready to be entertained.

'Can you dance, Miss Danvers?' asked Adelaide.

'O yes, I replied; 'but I have not been to any parties for more than a year.'

'Oh, how dreadful! We are awfully fond of it. We could not live without it.'

'Yes; you could if you were obliged to,' I said.

'Indeed I cannot imagine such a thing,' said Julia with a shudder.

'It is very strange without Jane this morning,' remarked Adelaide; 'she generally brings us news about Ma's letters, or tells us the plans for the day. We must take you sight-seeing, Miss Danvers. Now do you mind running down to see what letters Ma has?'

No sooner had I reached the sitting-room door than Mrs Porter addressed me: 'My dear, would you mind just running up to tell the girls that Algernon' (she pronounced it All-ger-non) 'is coming? He is'—here she nodded and winked. 'Ah, you must ask Miss Porter.'

I conveyed the said piece of intelligence to the three sisters, and found that Algernon was a cousin.

'Such a gentlemanly young man!' said Adelaide. 'Wait till you see him. He's well to do in the City. Sometimes he doesn't know where to throw his money, he has so much.'

'And he generally brings such nice friends with

him,' said Julia. 'But wait till you see him; and you must ask Amelia about Algernon.'

'I had better go and see if Mrs Porter wants me,' I suggested; for I did not feel interested in Algernon, and I had had no breakfast.

When I got down-stairs, Jane exclaimed: 'Why I do declare miss hasn't had a bite o' nothing all this time!'

Mrs Porter pressed numerous dainties on me. Though I had not much appetite, I was thankful to sit down—it seemed years since I had left home.

Having carried that terrible tray down-stairs, I assisted the General to wash up; then Mrs Porter said: 'Would you mind running up to the first-floor, Miss Danvers? Just put the sitting-rooms straight and the fires alight; by that time the girls will have brought down some of their evening dresses that we must do up.'

Was my heart breaking? Could I bear it? I asked myself, as I ran up-stairs, if I should ever rest again; and wondered what I should say in my letter home. Then a vision of that face which had looked sorrowful for me but yesterday came across me; I felt a lump rising in my throat, and I cried—yes, cried for a moment or so; then I recovered myself, did my work, and rejoined them.

The whole morning was spent in repairing evening costumes and arranging what I could do in the afternoon. At one time they talked of taking me out; but this idea was soon abandoned; they had shopping that must be done; besides they must call upon the Smith-Jacksons.

About noon a telegram came from Cousin Algernon to say that he could not come over that evening. The girls seemed a good deal disappointed; but Mrs Porter suggested that they should accompany the Smith-Jacksons to a concert at the Albert Hall. I brightened up a little at this, thinking that being very fond of music they might take me. But not a word was said about it; till just as they were starting, and I had run up and down stairs for the twentieth time, Mrs Porter remarked: 'It is just as well you are not coming, Miss Danvers; you look tired.'

This was indeed true, and I was thankful when they had really gone, and I could sit down and rest. Then I felt rather amused. The General came and asked me to remain up-stairs in the 'best' rooms, as her young man was coming to see her. She would tell me when he was gone. I readily complied with her request. How can I describe the delightful feeling of rest earned after a long day's work, such as mine had been! And ah! how swiftly my thoughts flew to my home, already viewed as a far-off Paradise; how lovable all the little failings of its inmates, which I had resented or turned into ridicule, appeared to me now! I was tired of needlework; and there was not a book in the house that I cared to read. I had simply nothing to do, no one to speak with. So I sat by the flickering embers of the fire, and began to think I had not been so wise after all in leaving home. I did not consider for a moment whether I had been right or wrong; I only thought of the matter as it affected my happiness. About nine o'clock, to add to my depression, a street-organ struck up a most doleful *Home, Sweet Home*, and my tears came again for the second time within the twenty-four hours.

Mrs Porter and her daughters returned a little

earlier than on the previous evening. The next morning was a counterpart of the one already described; and for the next few days my life and duties remained unvaried.

One Sunday afternoon they took me for my first walk in the Park. I did not care about it much, in spite of the motley crowd and the many amusing figures. I felt weak, and unable to enjoy life under any circumstances. But an event of that afternoon created a slight change in my circumstances. We met Mr Algernon Dykes in the Park, and he accompanied us home to tea. It is easiest said in a few words—this gentleman was seized with a violent admiration for me from the first moment we were introduced. He was rather below the average height, inclined to be stout, with dark hair and moustache. He was extremely fond of dress and jewellery, could talk a little on every subject, but was too fond of trying to extract jokes from all that passed. It became wearisome.

When tea was over that evening, I disappeared as usual to assist the General, who had been, if possible, working harder than usual all day. When we had finished our work, I seated myself by the fire. Then Mrs Porter appeared, and I saw at once that she had something of importance to say.

'Look alive, my dear. We are going to take you to church with us this evening. The fact of it is,' she continued confidentially, 'Algernon thinks very highly of you, and says it is a great thing for the girls to have you, and you must be with them as much as possible; and he knows what's what, I can tell you.'

'Really, he's very kind, I am sure,' I said, laughing heartily for the first time since I had left home.

'He says you're such good style, quite the thing. Now my girls dress well, but they have no style; Algernon says they want it terribly.'

'I don't know what "style" means, Mrs Porter,' I remarked.

'That's just it, my dear; that's the beauty of it. Now go and get ready.' I obeyed.

We went to St Mary Abbot's Church, and had some difficulty in obtaining seats. I was not pleased when I found that Mr Algernon had managed to get next me, while the rest of our party were scattered here and there. The sermon seemed to be preached at me and meant for me; it dwelt on the virtue of contentment, on being satisfied with the life God lays before us, instead of striking out new paths for ourselves, and attempting untried tasks for the sake of novelty. I need not say that I applied these words to myself; and I wondered if any other individual in that large congregation was so nearly touched by them as I was.

But all this was banished from my mind by an incident that occurred just as we were leaving the church.

A young lady in front of me said in a voice loud enough for me to hear: 'Oh, I have left my Prayer-book.'

'I will go back for it,' replied another voice, which sent the colour rushing into my pale cheeks. *It was the voice of my fellow-traveller.* As he turned to go back, he caught sight of me, started, and smiled. I wondered often during the rest of the evening whether it was only my fancy, but I thought he coloured too. After this we

were soon out and walking briskly up the High Street; the Porters joined some friends and were soon talking and laughing. I managed to fall back and walk alone; this was all I wished, that I might again and again recall that smile, and the face which I had already enshrined in my heart as an idol.

EVENTS THAT NEVER HAPPENED.

ATTEMPTS of an instructive kind have been made to shew that, if slight circumstances had been other than they were, many of the great events of past history would not have occurred at all, or would have been so modified as to wholly change their character. The history of events that never happened is of course merely one mode of expressing a guess, a conjecture as to the probable result of something happening different from that which really did happen; but though only a guess or conjecture, it may possess value if well chosen and carefully traced out. Isaac Disraeli, in the early part of the present century, treated this subject in an ingenious manner; and Mr Lecky has done the same in his recently published work on the History of Civilisation. To our own columns the subject *if* is not new.

Suppose Xerxes had been successful: what then? Mr Lecky argues that the Greek intellect has been the great dynamic agency in European civilisation; that, directly or indirectly, it has contributed more than any other single influence to stimulate the energies, shape the intellectual type, determine the political ideals, and lay down the canons of taste for Europe as distinguished from Asiatic countries. But how easily might all this have been otherwise! If the invasion by Xerxes had been successful, and an Asiatic despotism established in Greece, it is difficult to imagine how Greek civilisation, poetry, art, influence could have survived. Yet he *might* have won the naval battle of Salamis, or the land battle of Plataea; for his ships and his soldiers greatly outnumbered those of the Greeks.

Livy presented an imaginary history of an invasion of Italy by Alexander the Great, shewing what *might* have happened if such an invasion had really taken place. He took a pride in the prowess and efficiency of the Roman legions, and was annoyed at the way in which certain Greek writers had insinuated that the great name of Alexander would have intimidated the Romans and checked their patriotic resistance. The historian entered into a parallel of soldier with soldier, general with general, strategy with strategy. He traced out an imaginary campaign, and shewed (to his own satisfaction at least) that his countrymen would have won, because the Greeks had only one Alexander, the Romans many. Livy and the Greek writers differed in their guesses as to probable results; but they all alike sought to grapple with events that did not happen.

A different strategy *might* have enabled Hannibal, after the terrible battle of Cannæ, to march

upon Rome and burn it to the ground. The Carthaginian general, as we know, gained this momentous victory somewhat over two centuries before the Christian era, killing more than forty thousand of the Roman troops. Had his march upon Rome been made, and made promptly, it is within the bounds of probability that the long series of important events which attended the formation of the Roman Empire would not have taken place; and a nation widely different in its position, its character, and its pursuits, would have presided over the development of civilisation.

Suppose Mohammed, the founder of Islam, had been killed in one of the first skirmishes of his career—what would have followed? There is no reason to believe that a great monotheistic religion, a military ecclesiasticism, would have been organised in Arabia, destined to sweep with the fanaticism of faith over an immense portion both of the Pagan and the Christian world. That system which has been maintained for more than a thousand years, and in three continents of the globe, would (as Mr Lecky contends) have been nipped in the bud. The early death of Mohammed was one of the events that did not happen; and it is open to us at anyrate to speculate on what might have been the history of the East, had accident removed the great ruler in early life.

Charles Martel, the titular mayor of the palace, but the real ruler of the Franks in the first half of the eighth century, had to contend against a formidable invasion of the Saracens, who conquered Bordeaux, crossed the Garonne, and threatened Tours. Charles Martel advanced, and defeated them with immense slaughter near Poitiers—the Saracen leader Abd-ur-Râhman being among the slain. Again and again they renewed their invasions, ending at last in their final defeat near Lyons. So disturbed was every part of the continent in those times by the intrigues and wars of kings, semi-royal feudatories, and aspirants for power; and the Duke of Guienne was so nearly balanced in opinion whether to aid the one side or the other; that if the first onslaught of the Saracens had not been checked at Poitiers, the whole tenor of European history might have been changed. Fancy has pictured that 'The least of our evils now would be that we should have worn turbans, combed our beards instead of shaving them, beheld a more magnificent architecture than the Greek; while the public mind would have been bounded by the arts and literature of the Moorish university.' The victory of the Christians was only gained after several days of doubtful and indecisive strategy; had it been lost instead of won, Mohammedanism (it is contended) would certainly have overspread Gallic and Teutonic Europe. The event which did not happen was perhaps as trifling in itself as that which really occurred. 'The obscure blunder of some forgotten captain, who perhaps moved his troops to the right when he should have moved them to the left, may have turned the scale

against his general Abd-ur-Râhman, and determined the fate of Europe.'

Another event that might have happened, and changed the course of modern history in momentous particulars, would have been the earlier arrival of a certain papal letter. When the fall of Anne Boleyn was determined on, the pope proposed to Henry VIII. terms of reconciliation between the king and the see of Rome, so flattering as to have a fair chance of acceptance. But the letter containing this proposal came to hand too late to be of service; for Henry married Jane Seymour the very day after he had decapitated poor Anne, and was content to defy the pope as he had hitherto done. If the letter had arrived a day or two earlier, might not the course of ecclesiastical and national events have been affected in a marked degree?

Another course of proceedings in the same critical century is connected with the history of the rival queenly cousins, Elizabeth and Mary Stuart. At a time when Queen Elizabeth was in ill health, and when mingled hopes and fears agitated the minds of her subjects as to the probable or possible results, the Countess of Shrewsbury desired her son to remain on the watch in London, with two good horses constantly ready to gallop off. If the queen died, he was to travel with the utmost speed to Edinburgh, there to announce the news to Mary Queen of Scots. Should this not improbable event (the death of Elizabeth at that precise period) have taken place, Mary Stuart would have been the heiress to the English throne, with the Roman Catholic influence of France powerfully influencing her conduct. But Elizabeth recovered from her illness, the son of the Countess of Shrewsbury did not make his hurried gallop, and the current of affairs flowed on in the course so well known to all of us.

The next following century brought about a crisis in the struggle between the two great religions of Europe. Gustavus Adolphus, king of Sweden, after carrying on wars with Denmark and Russia for territorial rectifications, engaged with the Imperialists in what was really a religious war, Lutherans against Roman Catholics—a war in which Tilly, Wallenstein, and other redoubtable generals took part. Gustavus had immense success; his pressure on the Imperialists was becoming fraught with vast consequences. But a fatal shot ended his life at the battle of Lützen in 1632. Now comes the application of the theme under consideration. If the great Swede had survived that battle, in addition to having won it, a wonderful difference might have occurred in the effect upon Europe. The Reformation might have spread through Germany much more rapidly than it actually did. But Gustavus fell, 'the fit hero for a history which never happened.'

One generation later, and we find our own country engaged in a struggle which has influenced the destinies of England in a multitude of ways. If the battle of Worcester in 1651 had been won by the young Charles II. instead of by Cromwell, it would have been succeeded by other severe struggles, ending possibly in a permanent discomfiture of the Roundhead party.

Many and many a thoughtful mind pondering on the miseries produced in so many parts of Europe by the unbounded ambition of the First

Napoleon, preceded by the horrors witnessed in France during the Reign of Terror, has sought to shew what might have been *if* so and so had not happened at the time and in the manner it did. The military despotism of Napoleon had as one of its producing causes the desperate character of the Revolution commenced in 1789; this Revolution was mainly caused by the miseries of the people and the profligate vices of those classes which ought to have given the tone to national life. It has been asked—Was there not a time when a better chance might easily have been given to the French in the second half of the eighteenth century? 'The breaking out of the terrible Revolution, prepared as it undoubtedly was by a long train of irresistible causes, might have worn a wholly different complexion had the Duke of Burgundy succeeded Louis XIV., and directed, with the intelligence and liberality generally expected from the pupil of Fénelon, the government of France. Profound and searching changes in the institutions of France were inevitable; but had they been effected peacefully, legally, and gradually, had the shameless scenes of the Regency and of Louis XV. been avoided, the frenzy of democratic enthusiasm might never have arisen; and the whole Napoleonic episode, with its innumerable consequences, would never have occurred.'

We have taken the above illustrations partly from Isaac Disraeli, partly from Mr Lecky; because both writers attach importance to the little word *if*. If some single incident had occurred which did not occur—an incident perhaps regarded as of minor importance at the time—a great course of events might have been materially affected for generations or centuries in advance. Should any students of history maintain that events *cannot* be other than consequences of preceding events, and that all proceed in accordance with a chain of laws—then there is a fair field of fight between the two bodies of reasoners.

In scientific discovery and mechanical invention, events that did not happen might so very easily and probably *have* happened, that it is often difficult to award praise in justly due proportions to those who deserve it. Palissy the potter made many years' experiments to discover the art of obtaining white enamel; he impoverished himself, and when he had no more money to buy fuel for his furnace or kiln, he broke up household furniture for that purpose: if he had listened to the reproaches of his wife and the ridicule of his neighbours, he probably would not have attained the brilliant success which brought him competence and fame, and gave an important stimulus to the manufacture of porcelain and fine pottery. If Mr Edison had not pricked his finger while experimenting on the telephone, it is by no means certain whether or when he would have invented his phonograph: the form of the little spot of blood, affected by the movements of a vibrating diaphragm, suggested a new idea which struck root in his mind. The history of chemical manufactures, if traced in detail, would tell of more than one instance in which the accidental boiling over of a pot, kettle, caldron, or other vessel—perchance involving some workman in trouble at the time for negligence—resulted in a discovery bringing fortune to manufacturers and great advantage to the public. If the intended

process had gone on as usual without accident, the world would have been the worse for it; and yet the difference between what did and what did not happen was very slight in itself.

GETTING A BARGAIN.

AN eccentric friend of ours, fond of picking up good bargains, on one occasion attended a sale of old military stores in Edinburgh Castle. A lot of twenty drums with their drum-sticks were offered at the rate of sixpence a drum. Such a chance was not to be missed, and at his nod the hammer fell. He had to hire a cart to take the drums away, and then remembered he had no proper accommodation for them; so he called an open-air meeting of the juvenile population and distributed his prizes among them, more to their delight than that of the older inhabitants, who were nearly driven distracted by the constant din of the spirit-stirring drum.

A more profitable deal in military stores was effected by a Constantinopolitan Jew, who bought some six hundred rusty old helmets, that had long lain in the Church of St Irene, from the Turkish government at the rate of about sixpence a pound. He cleaned them up, and was rewarded for his pains by discovering that the despised martial relics were made of fine steel, and adorned with Arabic inscriptions shewing that they were of very ancient date. The lucky dealer sold a few for twenty piastres apiece. Finding they went off readily at that figure he raised the price to thirty, then to forty, and finally to fifty piastres; until an Armenian offered to take the lot off his hands at something like eighteen shillings per helmet; and he closed with the offer. The purchaser put them up for sale at the bazaars; and then the authorities waking up to their folly in parting with them so heedlessly, bought them back again at from two to three pounds apiece, and thought they did very wisely—a proof they had made a shocking bad bargain in the first instance.

They owed their expensive mistake to not knowing what they were selling. On the other hand, certain enthusiastic young painters threw away their money and much of their time too, through not knowing what they were buying. They had heard that the secrets of a great artist's colouring might be learned by carefully peeling one of his pictures coat by coat, and resolved to try the experiment. Clubbing together all their available cash, they became the owners of a Madonna by Titian, and went to work with a will. Mr Leland—our authority for the story—relates how the eager seekers after knowledge laid the precious picture on a table, and removed the outer varnish by means of friction with the fingers, until they raised a cloud of white dust that set them all sneezing, and made them look like so many millers. They thus arrived at the naked colours, which had by this time assumed a very crude form, owing to the fact that a certain amount of liquorish tincture, as of Turkey rhubarb, had become incorporated

somehow with the varnish, and to which the colours had been indebted for their golden warmth. This brought them to the glazing proper, which had been deprived of the evidence of age by the removal of the little cups which had formed in the canvas between the web and the woof. The next process was to remove the glaze from the saffron robe, composed of yellow lake and burnt sienna. This brought them to a flame colour in which the modelling had been made. The robe of the Virgin was next attacked; and upon the removal of the crimson lakes, it appeared of a greenish drab colour. So they went on removing every colour in the picture, diligently dissecting every part, loosening every glaze by solvents, and at last had the ineffable satisfaction of feeding their eyes on the design in a condition of crude blank chiaro-scuro. Blinded by enthusiasm, they flew at the white and black with pumice-stone and potash; when lo! the bubble burst, and the Titian proved to be a farce, as something very rubicund met their astonished eyes, which proved upon further excavations to be the tip of the red nose of King George IV.! So much for the genuine Titian!

The shrewdest of men are sometimes taken in. Barnum wanting to be shaved, went into a barber's shop. The place was pretty full of customers, and anxious to save time, Barnum got an Irishman to give him his turn on condition that he paid for both. Next day he found Pat had made the most of the opportunity, the knight of the razor presenting the following little bill for payment: To one shave, twenty cents; to one hair-cutting, twenty cents; to one shampooing, fifty cents; to one hair-dyeing, one dollar; to one bottle hair-dye, one dollar; to one bath, seventy-five cents. Total, three dollars sixty-five cents. Barnum settled up, and turned the bargain to account by having a picture painted for his Museum, representing the Irishman as he appeared before and after he had passed through the barber's hands.

A defendant in a suit heard in the Bury County Court being questioned as to what had become of five hundred pounds left to him by his mother, answered that it had gone where it was owing. Pressed for further explanation, he said he had paid it over to an innkeeper, according to the terms of an agreement made between them, that the legacy, little or much, which his mother might bequeath him, should as soon as it was received be paid to the publican; the latter on his part undertaking to keep him while he lived, and bury him respectably when he died. Who got the worst of the bargain in this instance it is impossible to say.—The profit and loss on such contracts are liable to be affected by undreamed-of contingencies. An intemperate ne'er-do-well was persuaded by a sharp man of business to turn some property he held over to him, in consideration of receiving two suits of clothes every year, and an allowance of twelve shillings a week so long as he lived; his speculative benefactor calculating the dissipated rascal would soon drink himself to death. He was doomed to be grievously disappointed. As soon as the agreement was signed, sealed, and delivered, the wily fellow forsook intoxicants, and lived respectably to a ripe old age, leaving the bargain-monger and his trustees after him, with a balance, so far as that

speculation went, very much on the wrong side of the ledger.

Some eighteen months back, a London newspaper informed its readers: 'The two islands known as the Barker Islands, which suddenly disappeared a little while ago, persist in declining to be found. It may be remembered that a Tasmanian capitalist named Fisher bought from the Australian government the right to remove guano from these islands, and that he despatched three vessels for guano cargoes to the latitude mentioned; but when the ships arrived, no trace of the islands could be discovered. It was supposed that they, together with their inhabitants, had disappeared through a volcanic eruption. Mr Fisher had unfortunately paid for his guano in advance; and now that the islands are nowhere, the guano is in exactly the same place. The worst of it is that the Australian government does not seem to have the smallest intention of returning the money paid by Mr Fisher, who also lost a large sum in fitting out the vessels.' A perplexingly bad bargain for the capitalist!

The Tasmanian however, had the consolation of knowing that he was the victim of an abnormal catastrophe of which he could not be expected to have prevision; which is nothing like so aggravating as falling a prey to designing craft, as happened to the proprietors of an American magazine, who paid a 'humourist' ten thousand dollars for the exclusive right to the product of his pen for twelve months, but omitting to make any stipulation as to the minimum quantity they were to receive, had to be content with a solitary contribution.—Just such another contemptible trick was that played by Peter Pindar in making up as a man nigh unto death, thereby obtaining three instead of two hundred pounds a year for the copyright of his works; an annuity the hypocrite enjoyed for many a year after his verse found readers.

Tired of fruitlessly demanding the settlement of an account, Horace Greeley sent it on to a western attorney for collection, advising him he might keep half the amount for his trouble. Some time elapsed without his receiving any communication, but at last came this gratifying note: 'DEAR SIR, I have succeeded in collecting my half of that claim; the balance is hopeless.' Having nothing else to pocket, Horace was fain to pocket the joke, and resolve to be more cautious in business dealings with strangers.—Through being over-cautious that way, a livery-stable keeper came off second-best. A wealthy German intent upon a day's outing, wanted to hire his best horse and trap; but not knowing his man, the horse-dealer demurred at trusting them in his hands. Determined to have his drive, the German proposed paying for the horse and the vehicle, promising to sell them back at the same price when he returned. To that the other saw no objection; so his customer's wants were supplied, and off he went. He was back to time at the stables, his money reimbursed according to contract, and he turned to go. 'Hold on!' exclaimed the dealer; 'you have forgotten to pay for the hire.' 'My dear sir,' was the cool reply, 'there is no hiring in the case; I have been driving my own horse and trap all day;' and he left the astonished man to his reflections.

Years ago there lived some miles from Philadelphia a farmer named Jerry Foster, noted for

eating much and spending little. One day he took a wagon-load of butter, eggs, potatoes, and ready-dressed pigs to the city; and before he had been long in the market disposed of all his stock save one pig. Driving round to a tavern the landlord of which was wont to supply market-folks with a dinner for twenty-five cents, he sold his roaster to Mr Randolph for seventy-five cents, and departed to while away the time until the dinner-hour. Jerry was punctual to the minute, and found no one ready for the meal but himself, the landlord, and his wife. Just as they were sitting down, Mr and Mrs Randolph were called away, the former telling Jerry not to wait for them, but go ahead. Before him, nicely crisped and brown, was his own roaster, with plenty of potatoes, cranberries, turnips, bread and butter; and the farmer went ahead to such good purpose that when the host and hostess returned to the room, they found Jerry leaning back in his chair picking his teeth, complacently regarding all that remained of the porker—its bones. He never dined there again.

Mine host is not usually, like Armado, ill at reckoning, but he does sometimes meet his master. A soft-looking stranger inquired at a Portland hotel what they charged for board, and was told he would be lodged and boarded for ten dollars a week. 'That's reasonable enough,' said he. 'But I may be away a bit; what deduction will you make for that?' 'Fifty cents a meal, and fifty cents a lodging,' replied the landlord; and Jonathan concluded to stay. Sometimes he was at the hotel, sometimes he was not. At the end of three weeks the landlord presented his bill for forty dollars, which was met by another to this tune: 'Meals eaten, three—one dollar fifty cents; lodgings, seven—three dollars fifty cents. Meals missed, sixty—thirty dollars; lodgings missed, fourteen—seven dollars. Balance against landlord, two dollars.' Jonathan's arithmetic was peculiar; but the landlord was too astonished to criticise it; and seeing his perplexity, his boarder considerably remarked that he need not mind about the two dollars, he would take them out in board; an observation that so complicated matters, that the puzzled hotel-keeper cut the Gordian knot by insisting on Jonathan's departure then and there, as he felt it was impossible to keep even with such a customer.

A couple of Irishmen thinking to combine pleasure with profit by doing a little unlicensed trafficking in liquor on the Derby Day, bought a small jar of whisky and started for Epsom. Knowing they would want a drop themselves on the way, it was agreed that neither should drink without paying. They had not travelled far on the road when one drank a glass and paid his partner threepence; he followed suit, and handed the money back again. It was a dusty toilsome journey, and upon reaching the Downs, they were dumbfounded by discovering the whisky was all gone, and that although they had honestly paid for every dram, they had only threepence between them, as the final result of their speculation.—Worse luck than this waited upon another Irish pair, if we may accept as authentic the story from the States: 'Mike,' said Dennis, 'I'll fall overboard, and you jump in and rescue me, and we'll divide the reward, which'll be a pound apiece.' 'Agreed,' said Mike, as he floundered

into the water. Then, and not till then did it dawn on Dennis that he could not swim a stroke. He stood leaning over the rail staring at the place where his friend went in. Once Mike came up, twice Mike came up, and Dennis made no sign. A third time Mike came to the surface, and looking up at his fellow-schemer, faintly cried: 'Denny, av ye ain't moighty quick, it's only ten shillings aich we'll get for recoverin' the body!'

DUST AS AN EXPLOSIVE.

WE have more than once drawn attention in this *Journal* to fires and their causes, and have endeavoured to point out certain rules for their prevention. Dust has hitherto been looked upon by tidy housekeepers and others, as simply so much unwholesome refuse which it is desirable to sweep away as it accumulates; but we will now proceed to shew, by quoting from an American contemporary, that accumulated dust is a highly dangerous as well as a disagreeable neighbour, and that to this cause may be attributed many of the fires the origin of which is 'unknown.' The notes, which we quote from the *American Exchange and Review*, are as follow:

'Since ordinary fire consists in the combination of the combustible body with the oxygen of the air, it is evident that in general the rapidity of the burning will be greatly increased by the degree of comminution of the combustible. Other things being equal, the finer the state of division the more energetic the combustion. The reasons for this are twofold—namely, First, the cohesion of the particles being partly overcome by the fine state of division; and second, the extended surface thus given to the combustible favouring its rapid union with the oxygen of the air. So powerful are these influences in increasing combustion, that many substances which in bulk are either relatively non-combustible, or are ignited only with considerable difficulty, are, when in a fine state of division, so very readily inflammable as to ignite spontaneously—using this word in the sense of combustion without the intervention of direct human agency. In some instances this spontaneous ignition is so rapid as to cause an explosion.

As an example of lessened cohesion influencing combustion, we may cite the case of iron. In large masses, iron burns or rusts but slowly; this rusting being a real burning—namely, a combination of the iron with the oxygen of the air. Iron filings burn with brilliant scintillations when dropped into a flame; iron in a finer state of division, as iron reduced from the oxide by hydrogen, can be ignited by a match like tinder. In a still finer state of division, obtained by the decomposition of the oxalate by heat, the iron is spontaneously inflammable when poured through the air.

Phosphorus in masses oxidises slowly in the air. Dissolved in carbon bisulphide, the subsequent evaporation of the solvent leaves the phosphorus in such a finely divided state as to render it spontaneously inflammable.

The fine condition of comminution of numerous materials, known as dust, affords various examples

of the influence of this condition of matter on the rapidity of its combustion.

Flour-dust—a name given to the very fine material which collects in various parts of flour-mills during the grinding of the wheat—has been found in a number of instances to possess the power of explosively igniting on the approach of a lighted candle, or perhaps by the passage through air charged therewith of an electric spark, produced by the friction of a belt on a pulley.

Explosions from similar causes have been known to occur in breweries. It is customary to raise the crushed malt from one floor to another by means of a series of cups revolving on a leather band. The casing which incloses the band is of course during the operation filled with floating dust, as is evident on opening any door leading into such casing, when a stream of malt-dust is shot out into the room. Now it has occurred, in a case cited in *Nature* for December 13, 1877, that in a large English brewery, that of the Messrs Allsopp, at Burton-on-Trent, a workman provided with an undefended light, shortly after the starting of some new works, on attempting to make an examination of the working of the leather band, was met, on the opening of a door leading into the casing, with an explosion sufficiently powerful to throw the band out of gear.

The publication of the above called forth the statement from a brewer, who asserts that no less than three explosions have occurred at his establishment from similar causes; so that it would appear that explosions from this cause are by no means uncommon. In one of these explosions the combustion was very sudden, and the flash quite sufficient to singe the whiskers of the operative causing it; while the force of the explosion was powerful enough to blow open the door of the engine-room, although the only communication between it and the place where the explosion occurred was a small hole, through which the shafting worked. The writer states that since he has taken the precaution of having a number of holes bored through the wooden box, to permit the free entrance of air, and so prevent the accumulation of the dust, no explosions have occurred.

From the foregoing instances it will be evident that no inspection of the smut-boxes of flour-mills, or of places where fine dust from crushed grain is thoroughly mingled with air, should ever be attempted with unprotected lights. Safety-lamps, of the same general type as those employed in collieries, alone should be used.

Carbon, as is well known, is one of the most valuable of our fuels, from the energy of its combination with oxygen. We might suppose therefore, that when this substance is finely pulverised, it would, like those already mentioned, have increased the power of rapid combination. We shall find on examination, that the facts of the case are in full accord with the supposition.

The power which charcoal possesses of condensing various gases within its pores is well known. This condensation is of course, like any other case of condensation, attended with the evolution of heat. If the charcoal be in a finely divided state, it will, if recently made, absorb oxygen so rapidly as to become spontaneously ignited. In the manufacture of charcoal for gunpowder, the charcoal is prepared by heating some dense hard wood, like dogwood or willow, in closed iron cylinders. After

cooling, it is then ground in mills, preparatory to being mixed with the sulphur and the nitre. Here then, we have freshly prepared charcoal in a finely divided state, and it is a well-substantiated fact that this material frequently ignites spontaneously on being removed from the mills. In some instances this ignition has been known to take place several days after the grinding. This however, is not the only instance in which charcoal in the condition of fine dust has been known to ignite spontaneously. Lampblack is one of the finest states in which carbon can be readily obtained in large quantities; and in this fine state of division, as might be expected, its ease of spontaneous ignition is very greatly increased. Cases have been known in which fires have occurred in manufactories of lampblack by the mere exposure of freshly prepared lampblack to air. Moisture appears to be especially active in determining the combustion. A mere drop of water, as of perspiration, or a small quantity of grease, will start a fire in a mass of the material, which will spread with great rapidity. The simple condensation of the moisture of the room on the window-panes requires, it is said, to be carefully looked after, lest, by igniting the dust settling thereon, it should cause a destructive conflagration.

One of the most interesting cases of the ready combustion of carbon in a state of fine division is perhaps the influence it exerts, when in the condition of fine coal-dust, in the destructive explosions of the gases in coal-mines. From the freshly cut surfaces of the coal, and from fissures in the veins of the mine, gas is constantly being evolved in large or small quantities, and (as we lately shewed while treating of *Fire-damp*) much of this gas forms, when mixed in certain proportions with air, a highly explosive mixture, which is ignited at once by contact with an uncovered flame. For this reason, as is well known, the necessity exists for the use of the safety-lamp of Davy, or any of its many equivalents.

TRANSLATION OF GOETHE'S 'HAIDEN-ROSLEIN.'

GREW a baby rosebud rare
 Lonely 'mong the heather;
 Morning was not half so fair.
 One looked long who, ling'ring there,
 Fain had looked for ever.
 Dainty, wayward, crimson rose;
 Rosebud 'mong the heather.
 'Sweet, I'll steal thee, ay or no!'
 Quoth he, from the heather.
 'Then I'll prick thee,' laughed she low,
 'Heedless, heartless—even so,
 Thou 'lt think on me ever.'
 Rosebud, rosebud; red, red rose;
 Rosebud 'mong the heather.
 Wilful wooers are not slow,
 Rosebud's o'er the heather.
 Thorns can wound till life-drops flow;
 In two hearts a weary woe
 Woke to slumber never.
 Rosebud, rosebud; red, red rose;
 Rosebud 'mong the heather.

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